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beyond time and sense, as it was wrought out by generations of earnest thinkers, have been fire to many a muse. They burned in the brains of the Chinese pilgrims, who braved the blasts of the Mongolian desert, climbed the cliffs of the Himâlayas, swung by the rope-bridge across the Indus where it rages through its gloomiest gorge, and faced the bandit and the beast, to peregrinate the Holy Land of their religion, and tread in the footsteps of the Master. Verses were graven on the walls of august temples at the command of Hindû emperors who abolished capital punishment, mitigated slavery, and established hospitals for men and animals, under the sway of this marvellous cult; and by Ceylon monarchs whose ruined reservoirs, as large as lakes, astonish us among the wonders of antiquity. And to-day, after twenty centuries of Roman and Christian culture, they have won the admiration of Europeans and Americans in every seat of learning, from Copenhagen to the Cambridges, and from Chicago to St. Petersburgh."

Mr. Edmunds has given us a very literal translation, but he has also had a literary ideal in view and sought by using an archaic and poetic style "to convey some flavor of the original" to his readers. While he remarks that it is "too ambitious a wish" to hope to naturalise in English this Buddhist holy writ as the King James Version has naturalised the Christian, an unbiassed critic can only say that he has contributed much toward this end. In this little book a living knowledge of the main Buddhistic doctrines is placed within the reach of every reader.

SUR LES PRINCIPES FONDAMENTAUX DE LA THÉORIE DES NOMBRES ET DE LA GÉOMÉTRIE. Par *H. Laurent.* Paris: C. Naud, Publisher. Pages, 68 Price, 2 francs.

In this number (No. 20) of the admirable scientific series called *Scientia*, devoted to the discussion of the burning questions of contemporaneous research, the distinguished French mathematician M. Laurent has considered the bases of the theory of numbers and of the theory of space. M. Laurent rejects axioms and begins with hypotheses. "An axiom," he says, "is a proposition which atavism, education, and the authority of our teachers have obliged us to accept as true without critical examination." His hypotheses are: "(1) I reason correctly (the hypothesis of all reasoning); (2) Quantity is to be defined (I suppose that quantity exists); (3) There are quantities susceptible of being divided into as many equal parts as one wishes (I shall define division into equal parts); (4) When a quantity increases or diminishes continuously without becoming larger or smaller than a fixed quantity it has a limit." "A truth is a plausible hypothesis or a logical consequence of non-contradictory hypotheses."

On this small number of hypotheses he seeks to found the theory of numbers. His point of view is utilitarian as distinguished from the æsthetic point of view of Tannery, Méray, and Cosserat. His conclusions he thinks to be just as simple as, and certainly more accessible to young minds than theirs. He is averse to their disinclination to base the theory of numbers on the consideration of quantity, and he remarks that since mathematics is a science having for its aim the study of the exact and necessary relations of magnitude, of the form and position of the objects accessible to our senses, therefore the above-named gentlemen are pursuing not mathematical but metaphysical researches. For them pure mathematics is an exercise in logic; for M. Laurent its object is the study of quantities with the help of numbers. Thirty pages of the work are devoted to the consideration of numbers and thirty-eight pages to that of pan-geometry. He concludes that the plane is an arbitrary surface, or rather that geometry could be taught without defining a plane but by merely calling it an arbitrary surface of which it is impossible to give a precise definition. Geometry is a physical and experimental science,—a language competent to co-ordinate facts, or rather *appearances*, and indifferently Euclidean or non-Euclidean. The Euclidean geometry is that which appeared most simple to the brain of our ancestors. It would not be astonishing if there existed intelligent beings on the planet Mars with a non-Euclidean geometry and with different ideas from ours regarding displacement without change of form.

ESSAYS ON THE THEORY OF NUMBERS. I. Continuity and Irrational Numbers. II. The Nature and Meaning of Numbers. By *Richard Dedekind.* Authorised Translation by Wooster Woodruff Beman, Professor of Mathematics in the University of Michigan. Chicago: The Open Court Publishing Company. London: Kegan Paul, Trench, Trübner & Co., Ltd. 1901. Pages, 115. Price, 75 cents.

The mathematical reading public unacquainted with German is under considerable obligation to Professor Beman for the present faithful rendering of these two celebrated essays of Dedekind. Modern logical views of continuity and arithmetic are largely based on the results which Dedekind and his contemporary, G. Cantor, furnished (the first of their essays was published in 1872), and it is good that these investigations should be made accessible to all readers in their original form. Furthermore, the German of these essays is not the easiest imaginable reading, and the interpretation of the forms of expression which Professor Beman has given and which has involved considerable study, will also be welcome to readers of German who are in the habit of purchasing but not perusing German books.

"In science," remarks Dedekind, "nothing capable of proof ought to be accepted without proof." But in laying the foundations of the simplest of the sciences, "viz., that part of logic which deals with the theory of numbers," this postulate has not been complied with. In saying that arithmetic (algebra and analysis) is a branch of logic, Dedekind by implication asserts that the number-concept "is entirely independent of the notions or intuitions of space and time . . . an immediate result of the laws of thought." His answer to the question of the nature and meaning of numbers is that "numbers are free creations of the human mind and serve as a means of apprehending more easily and more sharply the difference of things."